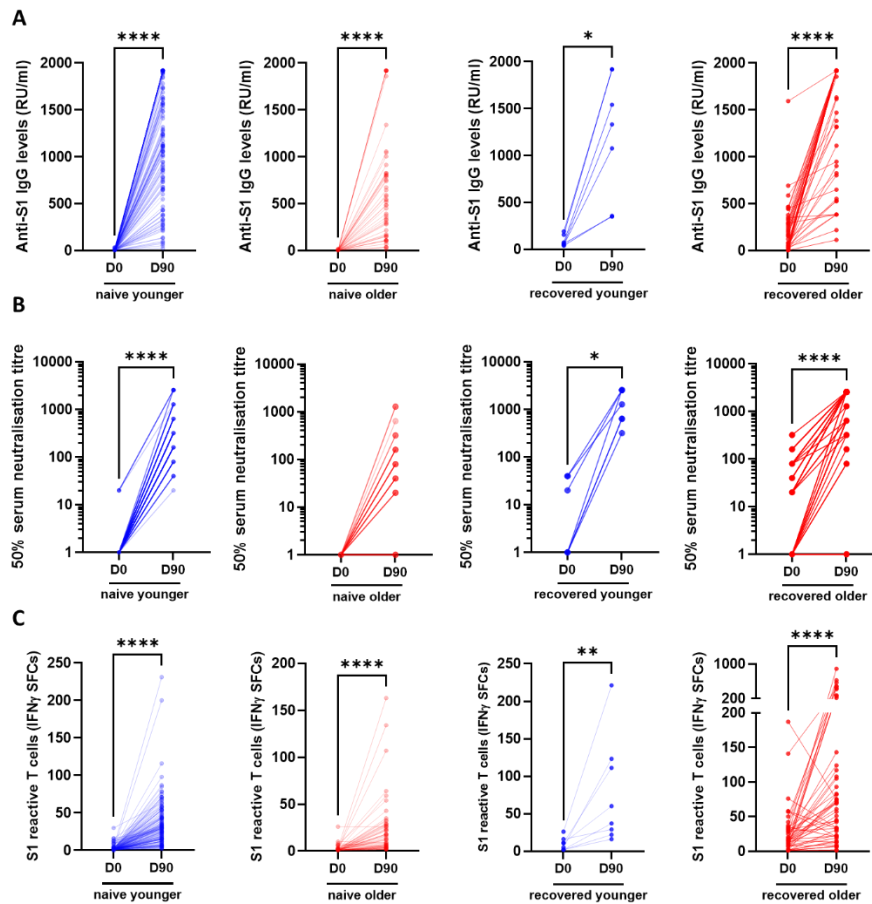
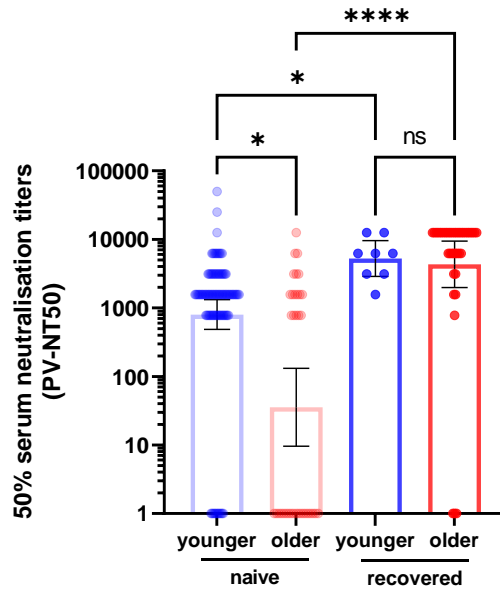


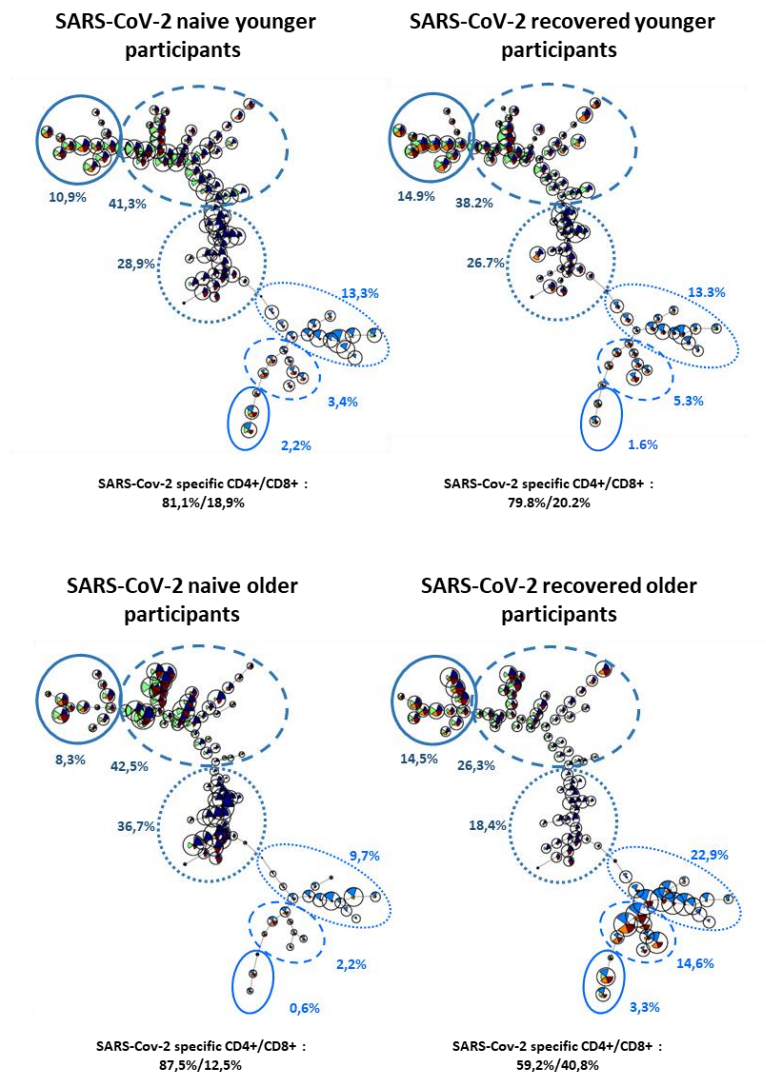
## Supplementary Figures



**Supplementary Figure 1** | Specific antibody and T cell responses in older and in young adults before (D0) and 3 months (D90) after the first injection of BNT162b2. **(A)** Anti-S1 IgG, **(B)** serum neutralization assay against live virus and **(C)** S1 reactive T cells (ELISpot) in COVID-19-naïve and in COVID-19-recovered participants. Wilcoxon matched-pairs signed rank test was used for paired comparisons. P values \* <0.05, \*\* <0.01, \*\*\*\* <0.0001. CTL, IFN $\gamma$  SFCs, interferon gamma spot forming cells.

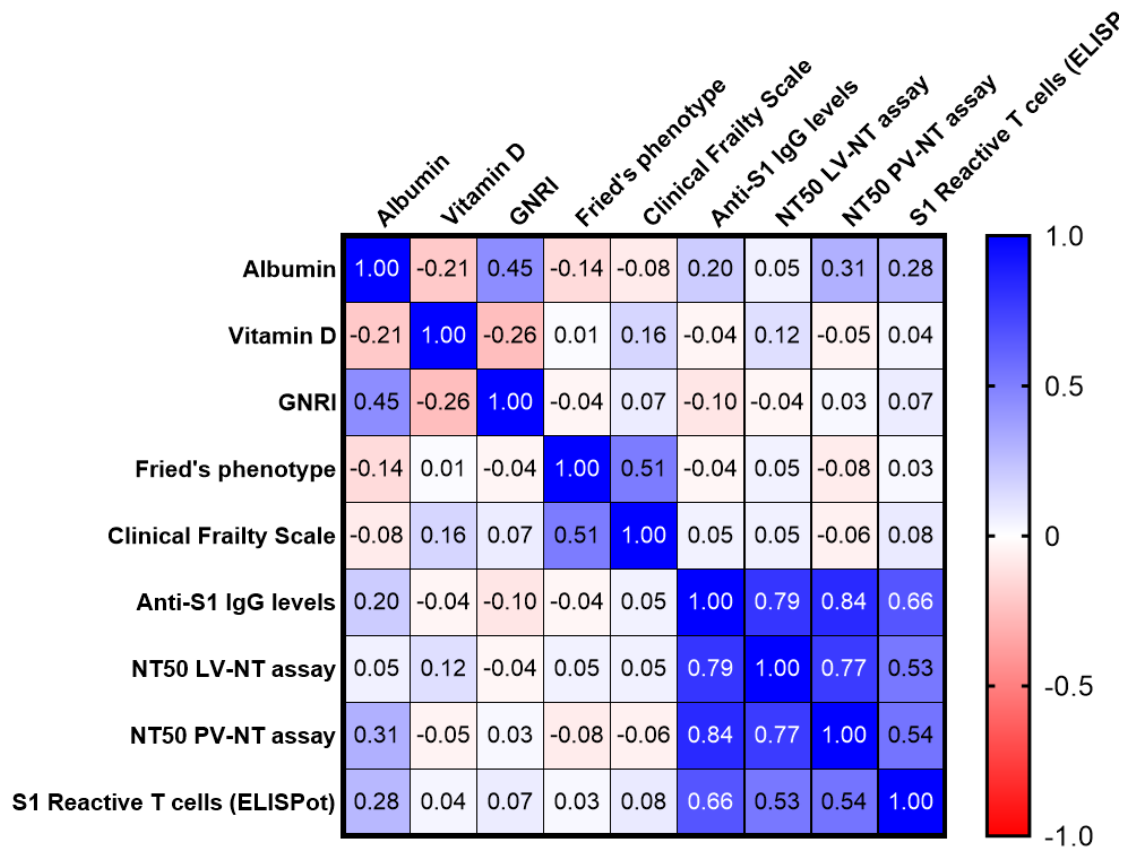


**Supplementary Figure 2** | Serum neutralization assay against pseudovirus. This figure shows the 50% serum neutralization titer in a pseudovirus neutralization assay (PV-NT50) in COVID-19-naïve younger adults ( $n = 103$ ), COVID-19-naïve older ( $n = 36$ ), COVID-19 recovered younger adults ( $n = 8$ ) and recovered older persons ( $n = 41$ ). Although the method was different from the live virus assay, the results of neutralization from one group to another were similar. Geometric median and 95% confidence interval are shown. P values \*  $< 0.05$ , \*\*  $< 0.01$ , \*\*\*  $< 0.001$ , \*\*\*\*  $< 0.0001$ , ns: not significant.

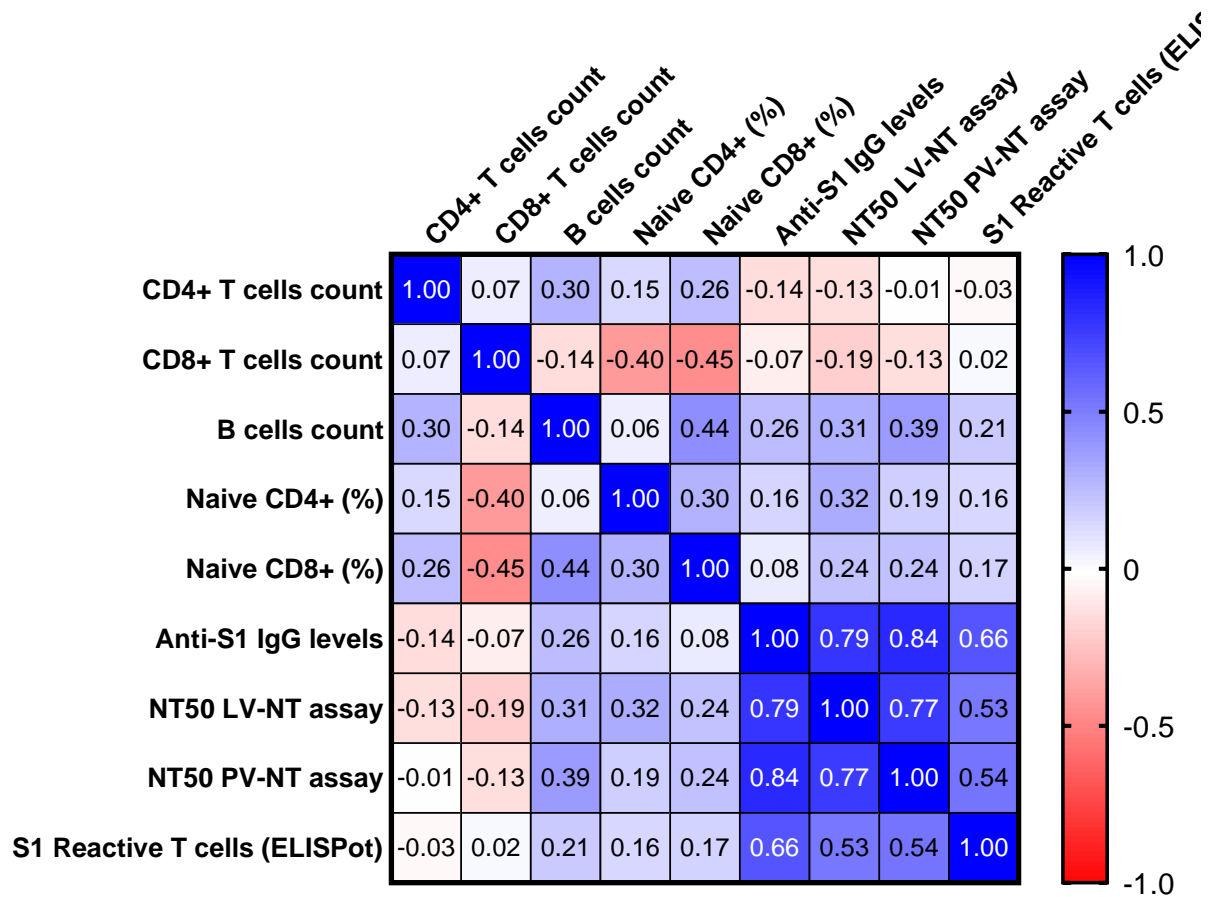


Cell clusters, defined on IL-2, IFN $\gamma$ , and/or TNF $\alpha$ production by T cells		Specific CD4+		Specific CD8+	
		None / Single* cytokine	.....	None / Single* cytokine	.....
		Double*	----	Double*	----
		Triple*	=====	Triple*	=====

**Supplementary Figure 3** | Cluster analysis of specific T cells subset after BNT162b2 in older and in young adults. FlowSOM results for COVID-19-naïve and COVID-19-recovered young adults (top) and for COVID-19-naïve and COVID-19-recovered older adults (bottom). Cell clusters were defined according to IL-2, IFN $\gamma$  and TNF $\alpha$  expression. Manual metaclusters were identified among specific CD4+ T cells (dark blue) and specific CD8+ T cells (light blue) for cells producing none or one (small dotted line), two (large dotted line) or three cytokines (plain line) out of IFN $\gamma$ , IL-2 and TNF $\alpha$ .



**Supplementary Figure 4** | Correlations between nutritional status and frailty scale at baseline, and main immune parameters of the post vaccinal response at 3 months in COVID-19 naive older subjects. The values correspond to Spearman's rank correlation ( $r$ ) coefficients. Only one correlation was found significant, between Albumin level and NT50 pV-NT ( $r$  [95% CI] 0.31 [0.022;0.55],  $P = 0.031$ , sample size  $n = 49$ ). AIM<sup>+</sup>, cell expressing activation induced markers; NT50 LV-NT assay, 50% serum neutralization titer in live virus neutralization assay; NT50 pV-NT assay, 50% serum neutralization titer in pseudovirus neutralization assay.



**Supplementary Figure 5** | Correlations between T and B cells counts at baseline, and main immune parameters of the post vaccinal response at 3 months in COVID-19 naive older subjects. The values correspond to Spearman's rank correlation ( $r$ ) coefficients. Only one correlation was found to be significant, between B cell count level and NT50 pV-NT ( $r$  [95%CI] 0.39 [0.009;0.63],  $P = 0.012$ , sample size  $n = 41$ ). AIM<sup>+</sup>, cell expressing activation induced markers; NT50 LV-NT assay, 50% serum neutralization titer in live virus neutralization assay; NT50 PV-NT assay, 50% serum neutralization titer in pseudovirus neutralization assay.